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SAPC 14805
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10 April 1957

CMCC Doc. No. 151X5.493
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Dear Dick:

We are forwarding herewith eight copies of Monthly Progress Letter No. 20, covering the work performed on System No. 3 during the period extending from 4 February 1957 to 4 March 1957.

Sincerely,

Burt

Burt

Enclosures:
CMCC Doc. No. 163X5.36
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Monthly Progress Letter No. 20

Contract No. A-101

System 3

4 February 1957 to 4 March 1957

CMCC Document No. 163X5.36

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1. General

During the interval covered by this progress letter, the major effort was directed toward the production of systems incorporating the modifications and improvements described in the previous progress letter. Five systems were delivered during this interval, two of which included the in-plant modifications described in the previous progress letter. The production status, and the progress achieved in a continuing program of System improvements involving minor modifications, is described below.

2. Production Status

a. The two delivered systems which include in-plant modifications are the first of the series which incorporate coaxial cables and connectors for use with certain of the r-f circuits, and etched-board connectors of the type which can be released during installation and removal of plug-in assemblies. These modifications are to be included in all systems having serial numbers from 12 up. All five systems delivered during this report interval include other modifications described in the previous progress letter.

b. All drawings, instructions, and parts lists pertaining to the modifications currently are being revised to facilitate the production of future systems.

3. System Improvements

a. The maximum sensitivity of the receiving set is determined by the fact that as receiver sensitivity is increased, the receiver responds to low-amplitude spurious signals. With an overly high sensitivity adjustment, the receiver will lock-on, and remain locked onto a spurious signal for the full lock-on period. If the sensitivity is reduced slightly,

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the receiver may produce a lock-on pulse but will not remain locked. Thus, under these conditions, the receiver performs its scanning function satisfactorily. However, if sensitivity is further reduced, scanning occurs with complete freedom from any evidence of incipient lock-on due to spurious signals. Freedom from lock-on due to spurious signals and the desirability of a sensitivity value which accommodates all expected production tolerances, were the original basis upon which sensitivity specifications were established. Improvements in system design have resulted in the production of systems which meet the originally established sensitivity specifications.

b. Sensitivity can be increased if the presence of incipient lock-on can be tolerated. Sensitivity can be improved further if sensitivity adjustments can be made on an individual receiver basis so that the maximum sensitivity for each receiver will be obtained. It is now the understanding of this contractor that these conditions are acceptable under present operational concepts. (This results in an average sensitivity improvement of approximately 8 db.)

c. Methods are still being sought to further improve the sensitivity of the receiving set with only minor modifications in design. Of these methods, two areas remain to be exploited: 1) minimizing the non-uniformity in the frequency response of the r-f distribution line which feeds the separate r-f assemblies, and 2) eliminating the disturbances which are reflected into the r-f distribution line by the gating action of the r-f amplifiers. An improved method of gating and an improved method of line adjustments are currently being investigated.

4. Planning

During the next reporting interval, the major effort will be directed toward system production and completing the minor design improvements indicated above.

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